APPENDIX A Metadata

Indiana 305(b) Electronic Update 2002
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Data Dictionary and Notes:

The period covered by this update includes water quality assessments reported from 1998 through 2002.

All USGS Cataloging units in the state are included in this update.

The data files submitted this year are:

FILE NAME	DESCRIPTION
IN02ADB.mdb	305(b) Assessment Database version 1.1.3
IN02prob_assess.xls (also IN02AppC.doc)	Comprehensive statewide water quality assessments based on probabilistic monitoring results. Intended for Section 106 funding calculations and Section 305(a) aquatic life use support reporting.
Indiana Reach Index files	Submitted to USEPA contractor RTI in January 2002. These are large files and can be resubmitted if requested.

The **unique waterbody_segment identification (WBIDSEGID)** in the 305(b) Assessment Database and the **entity_id** in the Indiana Reach Index 2001 are the same, providing for GIS table joins and links except for six segments of the Ohio River mainstem. Each of the six segments is recorded in the ADB separately. The segment information and assessment in the ADB are consistent with ORSANCO data. Three of these segments do not have an entity_id and appear to be part of the segment ending in "00" in the Indiana Reach Index 2001.

ADB WBIDSEGID	DESCRIPTION	Indiana Reach Index 2001 entity_id
INH3_00	OHIO RIVER – Kentucky R to Battle Cr	INH3_00
INH3_M01	OHIO RIVER – Battle Cr to McAlpine Dam	INH3_00
INH4_00	OHIO RIVER – McAlpine to Greenwood, KY	INH4_00
INH4_M01	OHIO RIVER – Greenwood, KY to Salt Cr	INH4_00
INH8_00	OHIO RIVER – Green River to Evansville	INH8_00
INH8_M01	OHIO RIVER – Evansville to Uniontown	INH8_00

The following **assessment method, cause, and source codes were added to the database**:

METHODCODE	METHODNAME	METHODNATEQ
192	Bacteria data extrapolated from upstream or downstream waterbody	191
193	Sediment chemical data extrapolated from upstream or downstream waterbody	191
223	Non-fixed station physical/chemical conventional + pesticides during key season	222
245	Rotating basin probabilistic physical/ chemical	240
246	Non-fixed station field data + pesticides growing season	242
323	Macroinvertebrate community assessment, mIBI family level	320
332	Fish community assessment, IBI	330
376	Qualitative Habitat Evaluation Index, QHEI; by professional	375
421	Water/ five E. coli samples in 30 days	
422	Water/ E. coli grab samples	
730	Rotating basin probabilistic water chemistry, fish IBI, QHEI, mIBI	700
CAUSECODE	**CAUSENAME**	**CMJRCODE**
10	Biotic community status	0
310	PAHs	300
565	Nickel	500
1210	Organic Enrichment	1200
1220	Low DO	1200
1320	TDS	1300
1330	Chlorides	1300
SRCCODE	**SRCNAME**	**SRCNATEQ**
1060	Livestock	1000
8010	Nonpoint source/ unknown origin (No longer used)	8950
8960	Nonpoint source/ unknown origin	8950

The following **cause code definitions** were used during the assessment process. "Not used" means that the cause code was not used for this report. It may be defined and used at a later date.

CAUSECODE	CAUSENAME	DEFINITION
0	Cause Unknown	Major category for biotic community response
10	Biotic community status	Biological assessment indicates impairment
100	Unknown toxicity	Not used
200	Pesticides	Chlordane, Endrin, DDT, atrazine
250	Atrazine	Atrazine exceeds EPA aquatic life chronic criterion
300	Priority organics	Parameter is an organic priority pollutant
310	PAHs	Polynuclear aromatic hydrocarbons
400	Nonpriority organics	Organic chemicals
410	PCBs	Polychlorinated biphenyls
420	Dioxins	Exceeds ORSANCO value for Ohio River
500	Metals	Major category included with all metals
510	Arsenic	More than one result exceeds the chronic criterion in a three-year period
520	Cadmium	"
530	Copper	"
540	Chromium	"

CAUSECODE	CAUSENAME	DEFINITION
550	Lead	"
560	Mercury	"
565	Nickel	"
570	Selenium	"
580	Zinc	"
600	Unionized Ammonia	Exceeds 1999 EPA ammonia criteria
700	Chlorine	Not used
720	Cyanide	Free cyanide in Grt. Lakes, total cyanide downstate
750	Sulfates	Sulfate anion concentration exceeds criterion
800	Other inorganics	Not used
900	Nutrients	Inorganic nutrients are driving physico/chemical stream imbalance
910	Phosphorus	Not used
920	Nitrogen	Not used
930	Nitrate	Not used
990	Other	Not used
1000	pH	Parameter is outside criteria range
1100	Siltation	Imbeddedness and smothering of substrate; Loss of depth for lakes
1200	Organic enrichment/Low DO	Major category included with organic enrichment and low dissolved oxygen
1210	Organic enrichment	Biological assessment or measured parameters indicates sewage or manure
1220	Low DO	Stream dissolved oxygen results do not meet criteria
1300	Salinity/TDS/chlorides	Major category included with total dissolved solids
1310	Salinity	Not used
1320	TDS	Total dissolved solids
1330	Chlorides	Chloride anion concentration exceeds criterion
1400	Thermal modifications	Water temperature exceeds standard
1500	Flow alteration	Not used
1600	Other habitat alterations	Response to land use practice such as cattle in stream, dredging, channelization. not used with biological community status
1700	Pathogens	E. coli exceeds water quality criterion
1800	Radiation	Not used
1900	Oil and grease	Use PAHs when data is available
2000	Taste and odor	Algal growth impact on drinking water reservoir that requires additional treatment of raw water
2100	Suspended solids	Not used
2200	Noxious aquatic plants	Not used
2210	Algal Grwth/Chlorophyll a	Overgrowth of algae observed
2400	Total toxics	Not used
2500	Turbidity	Not used
2600	Exotic species	Non-native plants or animals including algae

The following **source code definitions** were used during the assessment process. "Not used" means that the source code was not used for this report. It may be defined and used at a later date.

SOURCE CODE	SOURCE NAME	DEFINITION
100	Industrial Point Sources	NPDES-permitted industrial facility
110	Major Industrial Point Source	Not used
120	Minor Industrial Point Source	Not used
200	Municipal Point Sources	NPDES-permitted municipal facility
210	Major Municipal Point Source	Not used
212	Major Municipal Point Sources - dry weather discharges	Not used
214	Major Municipal Point Sources - wet weather discharges	Not used
220	Minor Municipal Point Source	Not used
222	Minor Municipal Point Sources - dry weather discharges	Not used
224	Minor Municipal Point Sources - wet weather discharges	Not used
230	Package Plants (Small Flows)	NPDES Semi-public facility
400	Combined Sewer Overflow	Within CSO community or observed discharge
500	Collection System Failure	Pump, lift station, overflow; sewer line break
900	Domestic Wastewater Lagoon	Not used
1000	Agriculture	Farming activities
1050	Crop-related Sources	Land use is row crops
1060	Livestock	Land use is grazing, animal feeding
1100	Nonirrigated Crop Production	Not used
1200	Irrigated Crop Production	Not used
1300	Specialty Crop Production	Not used
1350	Grazing related Sources	Not used
1400	Pasture grazing - Riparian and/or Upland	Not used
1410	Pasture grazing - Riparian	Not used
1420	Pasture grazing - Upland	Not used
1500	Range grazing - Riparian and/or Upland	Not used
1510	Range grazing - Riparian	Not used
1520	Range grazing - Upland	Not used
1600	Intensive Animal Feeding Operations	Permitted or unpermitted confined animal feeding
1620	Concentrated Animal Feeding Operations (permitted, point source)	Not used
1640	Confined Animal Feeding Operations (NPS)	Not used
1700	Aquaculture	Not used
1800	Off-farm Animal Holding/Management Area	Not used
2000	Silviculture	Not used
2100	Harvesting, Restoration, Residue Management	Not used
2200	Forest Management (pumped drainage, fertilization, pesticide application)	Not used
2300	Logging Road Construction/Maintenance	Not used
2400	Silvicultural Point Sources	Not used
3000	Construction	Major category for construction and land development
3100	Highway/Road/Bridge Construction	Road construction, including bridges

SOURCE CODE	SOURCE NAME	DEFINITION
3200	Land Development	Residential or industrial building
4000	Urban Runoff/Storm Sewers	Major category for urban discharge not a WTP
4100	Non-industrial Permitted	Not used
4200	Industrial Permitted	Not used
4300	Other Urban Runoff	Overland and unknown residential and urban source
4400	Illicit connections/illegal hook-ups/dry weather flows	Straight pipes, unpermitted discharges
4500	Highway/Road/Bridge Runoff	Not used
4600	Erosion and Sedimentation	Information/observations indicating soil eroding into water body
5000	Resource Extraction	Major category for mining
5100	Surface Mining	Not used
5200	Subsurface Mining	Not used
5300	Placer Mining	Not used
5400	Dredge Mining	Not used
5500	Petroleum Activities	Not used
5600	Mill Tailings	Not used
5700	Mine Tailings	Not used
5800	Acid Mine Drainage	Low pH, high total dissolved solids and/or sulfates
5900	Abandoned mining	Inactive mine is source
5950	Inactive mining	Not used
6000	Land Disposal	Major category for land application activities
6100	Sludge	Not used
6200	Wastewater	Not used
6300	Landfills	Landfill is the source
6350	Inappropriate Waste Disposal/Wildcat Dumping	Unpermitted landfill or disposal site
6400	Industrial Land Treatment	Not used
6500	Onsite Wastewater Systems (Septic Tanks)	Leaking septic tanks
6600	Hazardous Waste	Not used
6700	Septage Disposal	Not used
7000	Hydromodification	Major category for anthropogenic alteration of channel or banks
7100	Channelization	Straightening channel; destroying instream habitat
7200	Dredging	Removing instream sediment/habitat
7300	Dam Construction	Altered habitat
7350	Upstream Impoundment	Not used
7400	Flow Regulation/Modification	Stream discharge volume is altered and upstream channel flooding occurs
7550	Habitat Modification (other than Hydromodification)	In-stream habitat destroyed, removed
7600	Removal of Riparian Vegetation	Bushes, trees removed; row crops to bank edge; bare soil
7700	Bank or Shoreline Modification/Destabilization	Bank is eroding, undercutting
7800	Drainage/Filling Of Wetlands	Not used
7900	Marinas	Not used
7910	In-water releases	Not used
7920	On-land releases	Not used
8010	Nonpoint source/ unknown origin	Not used

SOURCE CODE	SOURCE NAME	DEFINITION
8050	Erosion from derelict Land	Not used
8100	Atmospheric Deposition	Not used
8200	Waste Storage/Storage Tank Leaks	Not used
8250	Leaking Underground Storage Tanks	Not used
8300	Highway Maintenance and Runoff	Not used
8400	Spills	Not used
8500	Contaminated Sediments	Legacy contaminants in sediments; no associated point source
8520	Debris and bottom deposits	Stream bottom is altered from anthropogenic activities
8530	Internal nutrient cycling (primarily lakes)	Not used
8540	Sediment resuspension	Not used
8600	Natural Sources	Naturally occurring
8650	Waterfowl	Not used
8700	Recreation and Tourism Activities (other than Boating - see 7900)	Not used
8710	Golf courses	Not used
8900	Salt Storage Sites	Not used
8910	Groundwater Loadings	Not used
8920	Groundwater Withdrawal	Not used
8950	Other	Major category for nonpoint source
8960	Nonpoint source/unknown origin	No permitted facilities upstream; NPS is most likely
9000	Source Unknown	Associated mostly with fish consumption advisories and lakes
9050	Sources outside State Jurisdiction or Borders	Not used

Waterbody segments were classified as monitored if surface water data reviewed and used for assessment were no more than five years old. Fish tissue and surficial sediment results used for fish consumption advisories may be older than five years. Segments with monitoring site(s) upstream and/or downstream, which were applicable to the segment, were classified as monitored. **Waterbody segments were classified as evaluated** if the primary data used for assessment was more than five years old or the assessment was based on other monitored segments in the watershed.

Sample start and end dates represent the earliest sample and latest sample reviewed in the process. For instance, a waterbody that was monitored in 1998 may have sample date range of 1987 to 1998 because fish tissue sample results from 1987 were reviewed for the assessment and considered still applicable.

Cause/stressor magnitude codes were assigned to each parameter within a waterbody based on the following process.

High (H)-- Waters with acute criteria violations of state water quality standards for toxic substances or ammonia; a group 5 (do not eat any fish) fish consumption advisory for PCBs or mercury; scores of very poor or less based on biological assessments; and waters with *E. coli* values above 10^4.

Medium (M)-- Waters with chronic criteria violations of state water quality standards for toxic substances, ammonia or dissolved oxygen; waters scoring poor on biological assessments; waters which had group 3 or 4 fish consumption advisories for mercury or group 2,3, or 4 for PCBs; and waters where *E. coli* values from 10^3 to 10^4 predominate.

Slight(S)-- Waters with violations of state water quality standards for pH, chlorides, etc.; waters with group 2 or 3 fish consumption advisories for mercury; and waters where *E. coli* values less than 10^3 predominate.

State assigned (T)-- The "T" designation is used as a marker to identify waterbody segments for which more information is needed in order to evaluate this parameter. All other information for the segment indicates full support of the use and the waterbody is classified as fully supporting. The marker is used for:

- Low level metals samples, which were neither collected nor analyzed using clean techniques. The results were unreliable by themselves; other related data such as source, discharge volume, loading were not readily available at the time of assessment.
- Low level cyanide results, which were unreliable; analytical test method evaluation is in progress.

The waterbody will be reevaluated when additional assessment information is available.

Source magnitude codes generally correspond to the cause magnitude code for each waterbody.